

IN THE CLAIMS:

Please amend the claims as follows:

1. (Currently amended) A digital signal receiver comprising:
- an input terminal for receiving ~~an~~ a digital modulation input signal ~~with digitally~~ modulated;
 - at least two variable gain amplifiers coupled in series to said input terminal for controlling the level of the input signal;
 - an analog-to-digital (A/D) converter for receiving an output of said variable gain amplifier;
 - a level comparator coupled to an output of said A/D converter for comparing a level of the output of said A/D converter and a reference level;
 - a loop filter coupled to said level comparator; and
 - a control voltage generator for generating control voltages for controlling said variable gain amplifiers based on an output of said loop filter,
- wherein an operation-starting point of any said variable gain amplifier is shifted ~~with~~ using the control voltages when a level fluctuation response speed of any of said variable gain amplifiers is lower than a reference level.
2. (Original) A digital signal receiver according to claim 1, wherein the operation-starting point is shifted when the operation-starting point is the same as a level of the input signal.

3. (Original) The digital signal receiver according to claim 1, wherein the operation-starting point is shifted when a level of the input signal is at a saturation point of said any of said variable gain amplifiers.

4. (Currently amended) A The digital signal receiver according to claim 1, comprising:
an input terminal for receiving a digital modulation input signal;
at least two variable gain amplifiers coupled in series to said input terminal for
controlling the level of the input signal;
an analog-to-digital (A/D) converter for receiving an output of said variable gain
amplifier;
a level comparator coupled to an output of said A/D converter for comparing a level of
the output of said A/D converter and a reference level;
a loop filter coupled to said level comparator; and
a control voltage generator for generating control voltages for controlling said variable
gain amplifiers based on an output of said loop filter,

wherein the operation-starting point is shifted based on an average of the control voltage for said any of said variable gain amplifiers and a fluctuation frequency of the control voltage for said any of said variable gain amplifiers ~~amplifier~~.

5. (Currently amended) A The digital signal receiver according to claim 1, comprising:
an input terminal for receiving a digital modulation input signal;
at least two variable gain amplifiers coupled in series to said input terminal for

controlling the level of the input signal;

an analog-to-digital (A/D) converter for receiving an output of said variable gain amplifier;

a level comparator coupled to an output of said A/D converter for comparing a level of the output of said A/D converter and a reference level;

a loop filter coupled to said level comparator; and

a control voltage generator for generating control voltages for controlling said variable gain amplifiers based on an output of said loop filter,

wherein the operation-starting point is shifted based on an average of the control voltage for said any of said variable gain ~~amplifiers~~ amplifier and a level fluctuation amplitude of the input signal.

6. (Currently amended) A The digital signal receiver according to claim 1, comprising:

an input terminal for receiving a digital modulation input signal;

at least two variable gain amplifiers coupled in series to said input terminal for controlling the level of the input signal;

an analog-to-digital (A/D) converter for receiving an output of said variable gain amplifier;

a level comparator coupled to an output of said A/D converter for comparing a level of the output of said A/D converter and a reference level;

a loop filter coupled to said level comparator; and

a control voltage generator for generating control voltages for controlling said variable gain amplifiers based on an output of said loop filter,

wherein the operation-starting point is shifted based on the control voltage for said any of said variable gain ~~amplifiers~~ ~~amplifier~~ and an electric power ratio of an adjacent channel and a desired channel.

7. (Cancelled)

8. (Currently amended) A The digital signal receiver according to claim 1, comprising:

an input terminal for receiving a digital modulation input signal;

at least two variable gain amplifiers coupled in series to said input terminal for controlling the level of the input signal;

an analog-to-digital (A/D) converter for receiving an output of said variable gain amplifier;

a level comparator coupled to an output of said A/D converter for comparing a level of the output of said A/D converter and a reference level;

a loop filter coupled to said level comparator; and

a control voltage generator for generating control voltages for controlling said variable gain amplifiers based on an output of said loop filter,

wherein the bandwidth is controlled based on average values of the control voltages and fluctuation frequencies of the control voltages.

9. (Currently amended) A The digital signal receiver according to claim 1, comprising:

an input terminal for receiving a digital modulation input signal;

at least two variable gain amplifiers coupled in series to said input terminal for controlling the level of the input signal;

an analog-to-digital (A/D) converter for receiving an output of said variable gain amplifier;

a level comparator coupled to an output of said A/D converter for comparing a level of the output of said A/D converter and a reference level;

a loop filter coupled to said level comparator; and

a control voltage generator for generating control voltages for controlling said variable gain amplifiers based on an output of said loop filter,

wherein the bandwidth is controlled based on average values of the control voltages and a level fluctuation amplitude of the input signal.

10. (Currently amended) A digital signal receiver comprising:

an input terminal for receiving a digital modulation ~~an~~ input signal ~~with digitally-~~
~~modulated;~~[[,]]

a variable gain amplifier coupled to said input terminal for controlling a level of the input
signal;[[,]]

an analog-to-digital (A/D) converter for receiving an output of said variable gain
amplifier;[[,]]

a level comparator coupled to an output of said A/D converter for comparing a level of the output of said A/D converter and a reference level;

a loop filter coupled to said level comparator;

a control voltage generator for generating control voltages for controlling said variable gain amplifier based on an output of said loop filter,

a demodulator for demodulating an output of said A/D converter, and

a ghost detector coupled to an output of said demodulator for detecting a delay time of

ghost, comprising:

a delay unit for delaying the output of said demodulator,

a ghost calculator for calculating the delay time and an energy of ghost,

a coefficient unit, and

an averaging unit for calculating a coefficient of said coefficient unit,

wherein a number of times of averaging at said averaging unit is controlled based on the delay time.

11. (Currently amended) A digital signal receiver comprising:

an input terminal for receiving a digital modulation ~~an~~ input signal ~~with digitally-~~
~~modulated~~_i[[,]]

A4
Cont
a variable gain amplifier coupled to said input terminal for controlling a level of the input
signal_i[[,]]

an analog-to-digital (A/D) converter for receiving an output of said variable gain
amplifier_i[[,]]

a level comparator coupled to an output of said A/D converter for comparing a level of
the output of said A/D converter and a reference level_i[[,]]

a loop filter coupled to said level comparator_i[[,]]

a demodulator for demodulating the output of said A/D converter_i[[,]] and

a ghost detector coupled to an output of said demodulator for calculating a delay time of
ghost_i[[,]]

wherein an operation-starting point of said variable gain amplifier is shifted based on the
delay time.

12. (Currently amended) A digital signal receiver comprising:

an input terminal for receiving a digital modulation ~~an~~ input signal ~~by digitally-~~
~~modulated~~;

a variable gain amplifier coupled to said input terminal for controlling a level of the input
signal;[[,]]

an analog-to-digital (A/D) converter for receiving an output of said variable gain
amplifier;[[,]]

a level comparator coupled to an output of said A/D converter for comparing a level of
the output of said A/D converter and a reference level;[[,]]

a loop filter connected to said level comparator;[[,]]

a demodulator for demodulating the output of said A/D converter;[[,]] and

a ghost detector connected to an output of said demodulator for calculating a delay time
of ghost;[[,]]

wherein a bandwidth of said loop filter is controlled based on the delay time.

13. (Currently amended) A digital signal receiver comprising:

an input terminal for receiving a digital modulation ~~an~~ input signal ~~with digitally-~~
~~modulated~~;

a variable gain amplifier coupled to said input terminal for controlling a level of the input
signal;

an analog-to-digital (A/D) converter for receiving an output of said variable gain
amplifier;

a level comparator coupled to an output of said A/D converter for comparing a level of
the output of said A/D converter and a reference level;[[,]]

A4
Cont

a loop filter coupled to said level comparator_i[[,]] and
 a carrier-to-noise (CN) ratio detector coupled to the output of said A/D converter for detecting a carrier-to-noise (CN) ratio of an input signal into said A/D converter_i[[,]]
 wherein an operation-starting point of said variable gain amplifier is shifted based on the CN ratio.

14. (Currently amended) A digital signal receiver comprising:

an input terminal for receiving a digital modulation ~~an~~ input signal ~~by digitally-~~
~~modulated~~;

a variable gain amplifier coupled to said input terminal for controlling a level of the input signal_i[[,]]

an analog-to-digital (A/D) converter for receiving an output of said variable gain amplifier;

a level comparator coupled to an output of said A/D converter for comparing a level of the output of said A/D converter and a reference level_i[[,]]

a loop filter coupled to said level comparator_i[[,]] and

a carrier-to-noise (CN) ratio detector coupled to the output of said A/D converter for detecting a carrier-to-noise (CN) ratio of an input signal into said A/D converter_i[[,]]

wherein a bandwidth of said loop filter is controlled based on the CN ratio.

15. (New) The digital signal receiver according to claim 11, further comprising a control voltage generator for generating a control voltage for controlling said variable gain amplifier from an output of said loop filter.

16. (New) The digital signal receiver according to claim 13, further comprising a control voltage generator for generating a control voltage for controlling said variable gain amplifier from an output of said loop filter.

*A4
concl*
17. (New) The digital signal receiver according to claim 14, further comprising a control voltage generator for generating a control voltage for controlling said variable gain amplifier from an output of said loop filter.
